

What Is Claimed Is:

1 ✓ 1. An image reading apparatus reading an image by
2 emitting light from a light source onto a surface
3 of an original, and converting the light reflected
4 from or passed through the surface of the original
5 into an electrical signal, the image reading
6 apparatus comprising:

7 a color image pick-up device having groups of
8 pick-up elements corresponding to a plurality of
9 colors, the groups of pick-up elements including a
10 plurality of pick-up element trains which are
11 arranged in parallel to one another on a substrate,
12 the pick-up element train being formed with a
13 plurality of pick-up elements arranged linearly;

14 an A/D conversion portion which subjects pixel
15 output data of the color image pick-up device to
16 A/D conversion;

17 a pixel data storage device which stores the
18 pixel data subjected by the A/D conversion portion
19 to the A/D conversion; and

20 an averaging device which applies an averaging
21 process to a plurality of adjoining pixel data on
22 each line stored in the pixel data storage device.

1 2. The image reading apparatus of claim 1,
2 further comprising a selection device which selects
3 whether applying the averaging process to the

4 plurality of adjoining pixel data on each line
5 stored in the pixel data storage device.

1 3. The image reading apparatus of claim 2,
2 wherein, in the color image pick-up device, at
3 least one of the pick-up element trains is shifted
4 relative to at least another of the pick-up element
5 trains by a pitch smaller than width of one of the
6 pick-up elements in an arrangement direction of the
7 pick-up elements thereof.

1 4. The image reading apparatus of claim 3,
2 wherein, in the color image pick-up device, the
3 pick-up element trains are mutually arranged with
4 a pitch integer times greater than twice each
5 height of the pick-up elements in a direction
6 perpendicular to an arrangement direction of the
7 pick-up elements thereof.

1 5. The image reading apparatus of claim 4,
2 wherein the groups of pick-up elements correspond
3 to red, green and blue, respectively.

1 6. The image reading apparatus of claim 5,
2 wherein each of the groups of pick-up elements
3 includes a first element train and a second element
4 train, and wherein the second element train is

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5 shifted from the first element train by about half
6 pitch of width of one of the pick-up elements.

1 7. The image reading apparatus of claim 6,
2 wherein each of the groups of pick-up elements
3 includes an opening smaller than a light receiving
4 area of one of the pick-up elements, and a
5 shielding portion blocking off the light directed
6 to a peripheral edge portion of one of the pick-up
7 elements.

1 8. The image reading apparatus of claim 1,
2 further comprising an input device capable of
3 setting a mode of reading an image different in at
4 least one of resolution and image quality,

5 wherein the averaging process is not performed
6 when a mode giving priority to resolution is set by
7 the input device but performed when the mode giving
8 priority to image quality is set thereby in order
9 to read the image.

1 9. The image reading apparatus of claim 8,
2 wherein, in the color image pick-up device, at
3 least one of the pick-up element trains is shifted
4 relative to at least another of the pick-up element
5 trains by a pitch smaller than width of one of the
6 pick-up elements in an arrangement direction of the
7 pick-up elements thereof.

13. The image reading apparatus of claim 12, wherein each of the groups of pick-up elements includes an opening smaller than a light receiving area of one of the pick-up elements, and a shielding portion blocking off the light directed to a peripheral edge portion of one of the pick-up elements.